User Manual

Many thanks for your selection of our products and services, and also for your trust and support to us.

English

Instruction Manual

for WH501WW/RF/MRF; WH502WW/RF; WH504WW/RF Thermostat

Features:

1. Heating / cooling control;
2. Easy operation and intuitive display;
3. Backlight display (for 220V);
4. Delay-time On / Off function;
5. The temperature difference between off and on is adjustable
6. Allowable to calibrate the temperature display;
7. Allowable to connect the external temperature sensor (Optional: NTC 100K). Outdoor temperature display provided.
8. Display adjustable between room temperature, outdoor temperature and preset temperature.
9. Applicable to control of no fan (WH501WW/RF), single-speed fan (WH502WW/RF) and three-speed fan (WH504WW/RF).
10. Fan speed adjustable automatically or manually (WH502WW/RF,WH504WW/RF).
11. Display adjustable between ℃ and ℉.
12. Eenergy saving function by using room card (WH501WW, WH502WW, WH504WW).
13. Antifreeze when turn off.
14. Allowable to set the highest temperature of heating and the lowest temperature of cooling.

English

15. Three transmission modes for selection, i.e. wired, wireless or multi-channel.
16. Allowed for wired / wireless installation in standard box(WH501 WW, WH502WW, WH504WW), or allowed to install on battery seat for wireless transmitting (WH501RF/MRF, WH502RF, WH504RF).
17. Multiple fault detection and display functions.

● Applicable Standards:

EN60730-1 and its revisions
EN60730-2-7
EN60730-2-9

● Compliant with the following EU directives:

EU B.T.73/23/EEC Directive
EU E.M.C.89/336/EEC Directive and 93/68/EEC Revision

● Specifications:

Power: 220V AC (±10%) 50 Hz or two LR6 1.5V alkaline batteries
Contact capacity: 3A/250V(WH501WW, WH502WW/RF, WH504WW/RF);
16A/250V (WH501RF); 5 A/250V(WH501MRF)
Range of temperature display: 0÷45℃/32÷113℉
Range of temperature setting: 5÷35℃/41÷95℉
Display accuracy: 0.1 ℃ (1℉)
Probe sensor: NTC(100K) 1%
Service life of relay: Switching times not less than 100,000 times
Protection level: IP20

Insulating condition: Normal environment

Working environment temperature: -18÷50℃/0÷122℉

Frequency: 433MHz (WH501RF/MRF)

Wireless transmission distance: Indoor 16/50m; outdoor 200m
(WH501RF/MRF,WH502RF,WH504RF)

Dimension(mm): 86H*86W*12D

Installation: Installed in standard box or on batter seat

Model Illuminate

For Exemple: WH501RF

WH-- stand for the symbol of thermostat

50-- stand for figure

1-- stand for the number of relay. (1: heating or cooling; 2: can control one fan;
4: can control 3 fans.)

RF-- stand for the way of communication. (WW: wired; RF: wireless;
MRF: wireless and more channels)

English

Scope of Control Applications:

1. Control of family air-condition and central air-condition;
2. Control of wall-mounted boiler
3. Control of Thermal Actuator or electromagnetic valve
4. Control of water pump;
5. Control of fan coil;
6. Ventilation control.

Definition of Icons on LCD Display: Fig. 1

88.8 Temperature display

Heating

Cooling

°E ℃/℉ display

h Hour

Low battery power

Outdoor Outdoor temperature

Set Setting

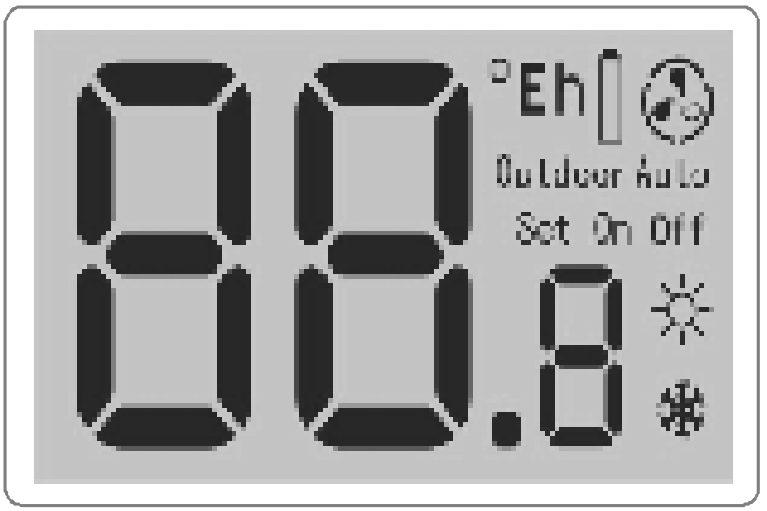


fig. 1

Set and On Set the start time

Set and Off Set the stop time

Off Indicating that the thermostat is under countdown state for stop

Single-speed fan is on

and Auto Single-speed fan under auto mode

Three-speed fan under manual low-speed mode

Three-speed fan under manual medium-speed mode

Three-speed fan under manual high-speed mode

and Auto Three-speed fan under auto mode

English

● Alarm Display:

00.0℃ Flash: Actual room temperature lower than 0℃

45.0℃ Flash: Actual room temperature higher than 45℃

E0.1: Temperature probe(NTC) disconnected

■ How to Use:

1. Control operations for heating or cooling

Rotate the knob to adjus the preset temperature. Upon each rotation of the coder, no matter to left or right, the LCD will show " Set " and at the same time, the display on the screen will change from room temperature to previous setting. Continue to rotate. Rotate left to decrease the temperature setting, or rotate right to increase the temperature setting. Each rotation will adjust the temperature by 0.1℃ (For Fahrenheit, the minimum adjustable value is 1℉). Rotate left to the lowest down to 5℃ and rotate right to the highest up to 35℃. The factory default value is 20℃. The LCD will display room temperature 3 seconds after stop of the rotation. The " Set " indicator will turn dark and the screen will resume to display of room temperature.

English

When the heating is started, the heating icon " ☼ " will turn bright. When the cooling is started, the cooling indicator " ❄ " will turn bright.

2. Delay-time On / Off

Setting of Auto On: When the thermostat is under On state, hold down the key while rotating the knob to set the time of Auto On. In this case, the upper right corner of the three-digit 00.0 on the screen will display " Set " (hour). The " Off " and " h "

indicators will turn bright and the time of Auto Off will be displayed. Left rotate the knob to decrease the time from 99.5h by a step of 0.5h, minimum down to 00.0h. Right rotate the knob to increase the time from 00.0 by a step of 0.5h, maximum up to 99.5h before turning to 00.0h. This number represents the time from the start of setting to stop. Stop rotating the knob and release the key to exit the Auto Off setting, so that the thermostat will enter in countdown state according to the preset time. In this case, except display of normal room temperature, the " Off " indicator will remain on the screen. If the preset time is 00.0, the " Off " indicator will be dark after exiting the setting. This is to activate the Auto Off function, in which case the thermostat will remain under normal display of room temperature.

Hold down the key after activating the Auto Off function. You may make left or right rotation of the knob to check the remaining time for Auto Off. You may continue to rotate the knob to change the remaining time for Auto Off. Release the knob and key to exit the setting.

Setting of Auto On: When the thermostat is under Off state, hold down the key while rotating the knob. In this case, the screen will display 00.0 and the "set " and "on " indicators will turn bright. Rotate the knob to set the time for Auto On in the same method as for setting of Auto Off.

English

3. Switch of Fan State

No fan: The key can only play the function for stop and delay-time stop.

Single-speed fan: By touching the key slightly, the fan will switch between three levels: Auto/ Manual Fan On/ Manual Fan Off, or switch according to the range in the Engineering Setting Sheet.

Three-speed Fan: By touching the key slightly, the fan will switch between five levels: Auto / High Speed / Medium Speed / Low Speed / Manual Fan Off, or select

according to the range in the Engineering Setting Sheet.

Whichever the state of the fan, you may hold down the key while rotating the knob to set the Auto Off. After setting of Auto Off, the operating state of the fan will remain unchanged.

You may hold down the key for 3 seconds to stop or start the thermostat directly. Stop of thermostat in this method will be prevail over Auto Off.

4. Card and Energy-Saving Mode

You may insert the card to switch to comfortable control mode and plug off the card to enter into energy-saving mode. The unit will automatically enter into energy-saving control according to heating or cooling mode.

	Energy-Saving Settings			
℃ or℉	Heating Setting	Range of Heating Settings	Cooling Setting	Range of Cooling Settings
℃	16	5-21	28	22-35
℉	61	41-70	82	72-95

English

If selecting the Off and entering into energy-saving mode, the thermostat will automatically activate the heating system when the room temperature is lower than the preset temperature for energy-saving state. In this case, the thermostat will be started to display the room temperature. When reaching the temperature, the thermostat will switch off the screen and continue to enter into energy-saving state.

If the preset energy-saving temperature or indoor temperature is equal to or lower than 8℃ under heating control state, the reheating temperature will be controlled by a setting of +2℃ if the room temperature is lower than the preset value.

5. Fault Display

When the room temperature is lower than 0℃, the LCD will blink in 00.0℃. When the room temperature is higher than 0℃, the LCD will resume automatically to normal display.

When the room temperature is higher than 45℃, the LCD will blink in 45.0℃. When the room temperature is lower than 45.0℃, the LCD will resume automatically to normal display.

Upon disconnection of the temperature sensor, the display will blink in E0.1, in which case you shall check and eliminate the fault.

6. Parameter Setting:

If holding down the key for 8 seconds when the thermostat is under Off state, the start of thermostat will be displayed after 3 seconds. If you continue to hold down the key for 5 seconds, the thermostat will enter into the setting of working parameters, in which case the “Set” indicator will turn bright. Rotate the knob to adjust the parameters and slightly press the key to save the parameters and proceed to next engineering setting. Hold down the key for 3 seconds to exit the storage. If not pressing any key or rotating the knob in 60 seconds, the thermostat will exit the storage and the screen will resume to “Off” state.

The first digit display: Engineering Setting Number	Notes on Numbering	Adjustable Range of Knob	The second digit display	The third digit display	Other display
1	To select heating or cooling control	Heating control (default)	N/A		
		Cooling control	N/A		
2	To set the temperature difference between stop and restart	Adjustable range shown on right (defaulted at 1.5℃)	0.2, 0.5, 1.0, 1.5, 2.0, 2.5, 3, 3.5, (Unit: ℃. For ℉, integral number)		
3	To set the state after stop of thermostat	Disconnect	N/A	0	
		Connect	N/A	1	
		Energy-saving state (default)	N/A	2	
4	Temperature compensation	Adjustable between −3℃and +3 ℃, by 0.1℃ for each increase or decrease (defaulted at 0)	For compensation of the decrease of temperature, "-" will be displayed at the position where ℃ is displayed. The minimum compensation temperature in ℉ is 1℉).		
5	Fan selection	No fan (default)	N/A	0	
		Single-speed fan	N/A	1	
		Three-speed fan	N/A	2	
6	Switch between ℃ and ℉	Display in ℃ (default)	N/A	0	
		Display in ℉	N/A	1	
7	Temperature display	Display of room temperature (default)	N/A	0	
		Display of preset temperature (The “Set” indicator turns bright at the same time)	N/A	1	
		Use of external temperature sensor to replace the internal temperature sensor for control and display	N/A	2	
		In every 10 seconds, the room temperature will be displayed for the first 8 seconds and the preset temperature will be displayed for the last 2 seconds (In this case, the "Set" indicator will turn bright)	N/A	3	
		In every 10 seconds, the room temperature will be displayed in the first 8 seconds and the outdoor temperature will be displayed in the last 2 seconds (In this case, the "Outdoor" indicator will turn bright).	N/A	4	

English

88.8	Energy-saving control mode	Normally-open energy-saving switch	N/A	0	
		Normally-closed energy-saving switch	N/A	1	
		Press the key to turn off the screen (To select this, please select the energy-saving mode in the setting number 3). Default	N/A	2	
98.8	Highest temperature of heating	10 - 35℃ (step length at 1℃). Defaulted at 35℃	Display of setting value		
08.8	Lowest temperature of cooling	10 - 32℃ (step length at 1℃). Defaulted at 10℃	Display of setting value		
A8.8	Preset heating temperature under energy-saving mode	5 - 21℃ (step length at 1℃). Defaulted at 16℃	Display of setting value		
C8.8	Preset cooling temperature under energy-saving mode	22 - 35℃ (step length at 1℃). Defaulted at 28℃	Display of setting value		
F8.8	Selection of program state	Program set in factory	N/A	0	
		Program set by customer (Default)	N/A	1	

English

7. Code Matching Operation

WH501 RF Mode: Press the receiver key, so that the receiver indicator will blink. If the transmitter is energized, turn off the transmitter's LCD, press the key and than the indicator will stop blinking. In this case, the code matching is finished. (Note: If no code matching signal is received during 1 minute when the indicator keeps blinking, this indicator will turn dark and the code matching will be stopped. Pressing the key again, the thermostat will again enter into code matching state).

WH501 MRF Mode: Press the receiver key, so that the indicator will blink in “one flash and one stop”. The thermostat will enter into the 1st channel code matching state. The code matching operation is same as that under WH501 RF mode. After completing the code matching, press the key again to start the 2nd channel code

matching, in which case the indicator will blink in “two flashes after one stop”. The thermostat then enters into code matching state. After completing the code matching, press the key again to start the 3rd channel code matching, in which case the indicator will blink in “three flashes after one stop”. The code matching is then started. Likewise, press the key for the fourth time to start the 4th channel code matching, in which case the indicator will blink in “four flashes and one stop”.

Faults and Repair

Problem	Possible Cause	How to Repair
The thermostat does not work	1. Not connected to power supply.	1.86 Box: Connect to 220VAC power supply. Battery seat: Check if the battery contact is in good condition. Enter into engineering setting and select the setting of number F to right mode
The heating system cannot be started.	2. If the system is under heating control. 3. If the preset temperature is higher than the temperature currently on display.	2. Enter into engineering setting and select the setting of number 1 to heating control. 3. Adjust the preset temperature higher.
The cooling system cannot be started.	4. If the system is under cooling control. 5. If the preset temperature is lower than the temperature currently on display.	4. Enter into engineering setting and select the setting of number 1 to cooling control. 5. Adjust the preset temperature lower.
The fan does not run.	6. If the fan is under auto mode. 7. If the heating or cooling is working.	6. Enter into engineering setting and change the fan working mode of number 5 7. Run the system under heating or cooling mode.
The room temperature displayed on the screen is not compliant with the actual temperature.	8. If the equipment is under run state. 9. If set to temperature calibration.	8. If the equipment is running, indicating that the temperature is in the process of heating / cooling. The two temperatures will be equal when the equipment finishs operation. 9. Enter into engineering setting and change the temperature compensation setting of number 4.

English

Cautions on Installation and Use:

1. To prevent the thermostat display from a high fluctuation, special treatment has been made to the program. Therefore, it is normal that the thermostat cannot immediately display the sudden change of temperature.

2. The thermostat installed in standard 86 box shall be placed 1.5m above the ground.

3. For the thermostat installed in standard 86 box or wireless thermostat with battery seat, take care not to install it to the wall corner, door / window side or behind the door or in such unheated area as exterior wall. Avoid hot / cold air duct, radiator, flue or thermal pipe.

4. If the wireless thermostat with battery seat is placed at a position where the air ventilation is poor, the temperature displayed on the thermostat might be inconsistent to the indoor average temperature.

5. Only the professional technicians are permitted to open the transmitting and receiving box of the thermostat for installation. When installing the power supply, make sure that the power cable is well insulated.

6. To install the receiving box, please install the base plate firstly and then connect the power and signal wire correctly before installing the upper cover and fix it. The thermostat is unrepairable product. The user shall not open the internal circuit board.

7. Before installing the thermostat, make sure that the system is disconnected. The maximum voltage of the system shall meet the requirements specified in the Instruction Manual (Max. AC Voltage: 250V).

Wring Illustration

1. Wiring Terminals

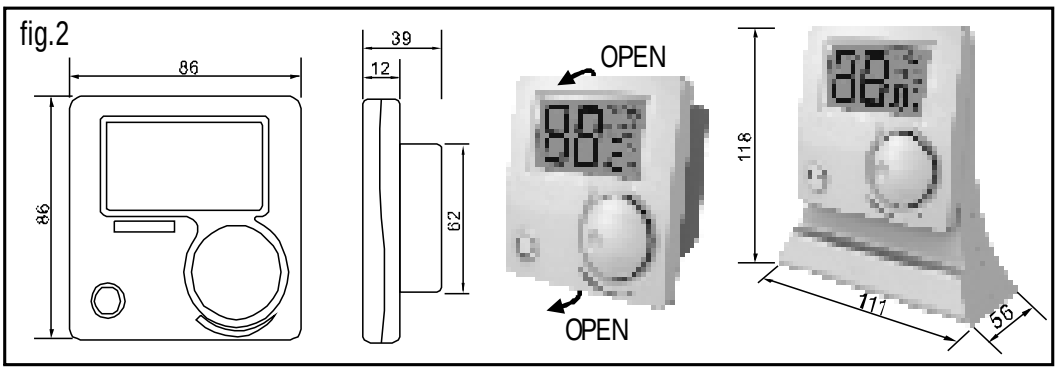
S/N	Wiring Terminal	Remarks
1	N	AC Neutral
2	L	AC Live
3	CI	Passive contact
4	CO	Passive contact
5	LF	Active connection of low-speed fan or single-speed fan
6	MF	Active connection of medium-speed fan
7	HF	Active connection of high-speed fan
8	SC	Public section (remote temperature sensor and energy-saving terminal)
9	RSB	Energy-saving terminal
10	RS	Remote temperature sensor

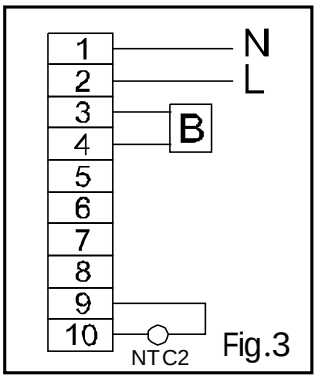
English

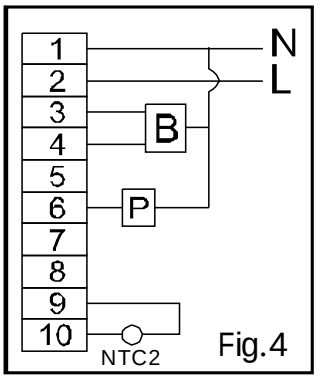
2. Symbol Illustration

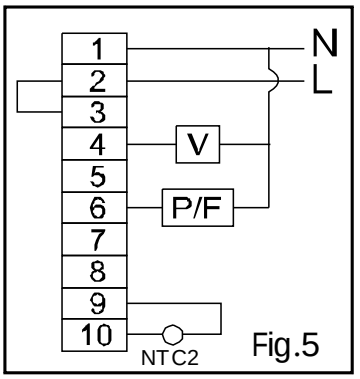
Symbol	Illustration	Symbol	Illustration
B	Boiler	P	Water Pump
○	Temperature Probe	F	Fan
V	Thermal Actuator or Air Conditioner Valve		

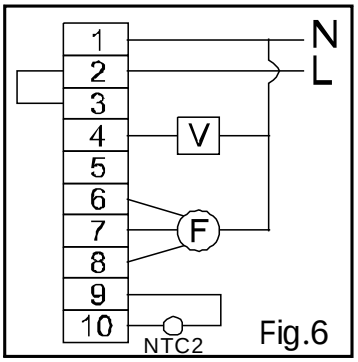
Control Illustration:

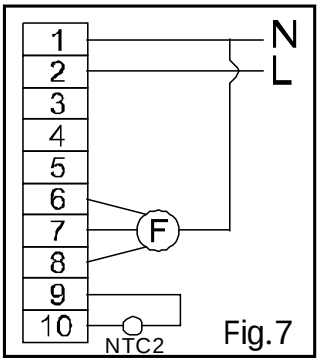


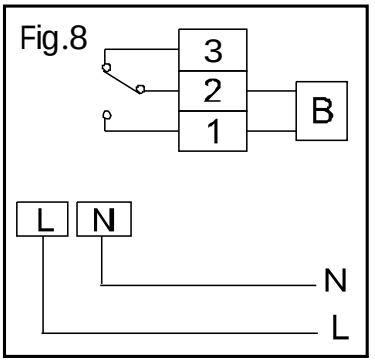


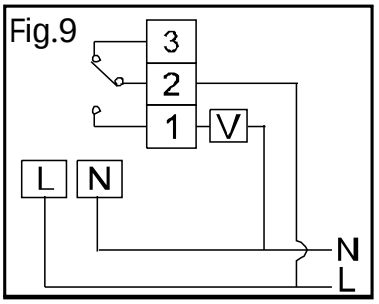


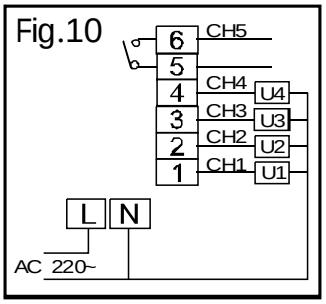












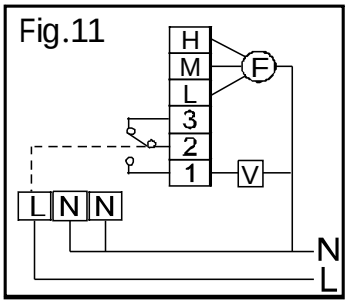


Fig.2:
Dimensional Diagram Length, Width, Thickness, Installing Size
Fig.3:
Control of Wall-mounted Boiler for WH501WW model
Fig.4:
Control of Wall-mounted Boiler + External Water Pump for WH502WW model
Fig.5:
Control of Air Conditioner Valve + Single-speed Fan / Control of Thermal Actuator + External Water Pump (WH502WW)
Fig.6:
Control of Air Conditioner Valve + Three-speed Fan (WH504WW)
Fig.7:
Control of Three-speed Fan (WH504WW)
Fig.8:
Control of Wall-mounted Boiler for RF model （WH501RF）
Fig.9:
Control Thermal Actuator or Air Conditioner Valve for RF model(WH501RF)
Fig.10:
Control of Ground Heating with Wireless 4-channel for MRF model(WH501MRF)
Fig.11:
Control of Air Conditioner Valve+Single-speed Fan /Three-speed Fan for WH502RF model and WH504RF model.

English